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BUREAU OF EDUCATIONAL RESEARCH
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INSTRUCTIONAL ACTIVITIES IN THE UNIVERSITY HIGH SCHOOL

By

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A REPRESENTATIVE ASSEMBLY AT THE UNIVERSITY HIGH SCHOOL

DONALD R. ALTER

On the first Monday in December, 1925, the Sixty-ninth Congress of the United States met at Washington, D. C., and on the same day the House of Representatives of the Sixty-eighth Congress re-assembled at the University High School, Urbana, Illinois. The members were high school pupils, who took their places in the assembly to reproduce the opening of the House of Representatives as it had occurred two years before. The large majority of the pupils knew nothing of the plans before arriving on the scene, but all seemed to enter into the spirit of the occasion readily enough.

The success of the assembly depended largely upon a class in advanced civics, fifteen in number, who were to be the really active participants in the work. The only discrimination shown in assigning parts was based upon actual ability to perform. Of the fifteen members of the class, three were girls, and each was given a rather important part.

One of the girls took the part of Mr. Rainey, of Illinois. Under this name she was in charge of nominating the Democratic candidate for speaker. She also took part in a spirited discussion on the right of Mr. Miller, also of Illinois, to a seat in the House. This same argument afforded an opportunity for a second girl. She, as Mr. Snell, ably supported the newly elected Speaker in his decisions or procedure. The third girl was none other than the Republican leader, Mr. Nicholas Longworth, of Ohio.

Among the boys, the most important positions were, of course, those of the Clerk of the last House, Mr. Page, and of the new Speaker, Mr. Gillett. Other important parts were taken by the boys who impersonated: Mr. Garrett, defeated democratic candidate for Speaker; Mr. Madden, also a candidate; the Reverend James Shera Montgomery, Chaplain of the House; and Mr. Greene, the "Father of the House." The other boys, under various names, found duties enough in nominating candidates, submitting resolutions, and similar activities. Perhaps the most difficult position of all was that of Mr. Miller, the silent object of considerable argument.

It must not be supposed, however, that remaining members of the student gathering were wholly inactive. A rather large number took minor parts given to them on slips of paper as they entered the door.

Twenty-two of them, for example, answered to names in the roll-call, and voted for the Speaker as instructed. Four others were tellers in the election, and a tiny Freshman, in long trousers, acted as page.

Naturally enough, there were a number of places in the program where it was necessary to depart from the actual happenings of the Sixty-eighth House. Much useless argument had to be eliminated and most of the speeches cut. In the roll-call and voting it was impossible to go through a list of 435 names, so it was decided to call only those from Alabama, the first state, and Wisconsin and Wyoming, the last two. This occasioned some laughter when the Clerk announced that 416 members had responded, after he had called only 22 names. Still it did not seriously detract from the success of the effort. In the election of a Speaker, it will be remembered that it actually took the Sixty-eighth House several days and numerous ballots to accomplish it. In the reproduction it had to be done with one ballot, and a short one at that. Despite these inaccuracies, however, it will be seen from the following program that enough of the actual activities of the House were reproduced to render the assembly instructive as well as entertaining.

1. William Tyler Page, Clerk of the Last House, called the House to order.
2. Rev. James Shera Montgomery, Chaplain of the last House, offered prayer.
3. Page made introductory speech, concluding with the roll-call.
4. Page added announcements concerning delegates from Alaska and Hawaii, and commissioners from the Philippines. He also read a resolution sent from the state legislature of Texas.
5. Page opened nominations for Speaker.
6. Anderson nominated Gillett.
7. Rainey nominated Garrett.
8. Browne nominated Cooper.
9. Reid nominated Madden.
10. Madden arose and disclaimed his candidacy.
11. Page enumerated the candidates and asked four members to act as tellers. He then called the roll by states for the voting.
12. Browne interrupted with a pertinent question about voting before being sworn in. Page answered.
13. Page announced the election of Gillett and called upon a committee to escort him to the chair.
14. Garrett, defeated candidate, introduced the newly-elected Speaker.
15. Gillett made his speech, concluding with, "I am now ready to take the oath of office."

16. Greene, the "Father of the House," administered the oath of office to the Speaker.
17. Gillett called the members to take the oath. A few came forward at a time.
18. Rainey disputed the right of Miller to take the oath of office.
19. Rainey, Madden, Gillett, Snell, and Britten took part in the argument which followed. Miller and another member were forced to stand aside until the other members were sworn in.
20. Anderson presented resolution, read by clerk, nominating candidates for all other offices.
21. Rainey presented a substitute resolution, and asked unanimous consent to a separation of the resolution just read. This was in order that the Rev. Montgomery might be elected Chaplain unanimously. The House agreed.
22. Rainey then presented his substitute resolution with candidates for the other offices.
23. The substitute resolution failed, the House agreeing to Anderson's resolution.
24. Longworth asked unanimous consent to speak for two minutes. He received the consent of the House, and spent the time in eulogizing Garrett. This was a fair return for Garrett's praise of Gillett.
25. Green, of Iowa, submitted a resolution, read by the Clerk, that notification be sent to the Senate. The House agreed.
26. Longworth submitted a resolution, read by the Clerk, that a committee be sent to join with a committee from the Senate to inform the President that the Congress was ready to receive communications from him. The House agreed.
27. Gillett appointed the Committee.
28. Longworth moved adjournment.

It would hardly be fair to discuss this program, noting only its success. One or two failures stood out rather prominently. The chief of these was in the matter of time. It had been estimated that the action would last for forty minutes, but so smoothly did the pupils perform their tasks that the entire course of events took only thirty. This left some ten minutes uncared for. Then the smoothness itself was scarcely a true representation of the activities of our national lower house. Still these failures may be pardoned. Judged from other standpoints, such as that of interest aroused in the student body, that of performance of those taking part, and that of instructive value, the effort may well be pronounced a success.

THE BOOK CLUB

GENEVIEVE DUGUID

In order to stimulate interest in reading, a book club has been organized in one of the Freshman English classes at the University High School. Two days of each week, in place of the usual recitation, the members of the class assume the responsibility of conducting a discussion of the books and authors which they become acquainted with through their supplementary reading.

This club has been from the time of its organization of great interest to the members of the class. Although the pupils agree that it invariably takes more time to prepare for the club meeting than for the English class, they are enthusiastic about it. It is unusual for any member to fail in doing his share of the club work. No one ever refuses to serve on any committee, and the pupils always do the work assigned to them by those in charge.

Our club elects its officers for a term of one semester. Each week the president appoints one committee to take charge of the program and a second to select material for the bulletin board. The teacher approves the committees in order that she may see that the work is fairly distributed among the members of the group. The chairman of the program committee announces the plans several days before the book club is to meet, in order that the pupils may have ample time for preparation.

A few of the meetings that have been planned and given by our first year pupils are described here in detail. One of the first meetings we called "Magazine Day." Each pupil brought his favorite magazine and spent a few minutes advertising it to the club. Many types of periodicals were represented in the class room, from *Youth's Companion* and *St. Nicholas* to the *Atlantic Monthly*. The members of the club discussed briefly those magazines which are consistently good and those that only occasionally include something worth while. They concluded that they would have greater interest in magazine reading if they had help in choosing what they would enjoy. As an outgrowth of this discussion, we had on our bulletin board for the remainder of the year a "Worth Reading" poster on which each pupil could place titles of articles in recent periodicals which he had found enjoyable. This little guide to reading seemed to function in leading the pupils to read more widely as well as to read from better magazines.

Frequently, the pupils chose to spend the hour in the study of the work of one author. In preparation each person read from that writer and came to club ready to contribute something of interest. Perhaps he talked about a topic related to the author's life or work. Perhaps the student brought to the meeting a good selection to read aloud, or groups planned to dramatize or pantomime a favorite incident. A more ambitious student might have chosen to memorize selections from his reading. Whatever the contributions were, the meeting invariably created interest in the work of the author discussed.

At one meeting the members of the club impersonated book characters. Each, by a characteristic bit of dialogue or pantomime, represented some favorite character. The other members of the club were quick to recognize such book people as John Silver, Tiny Tim, Ramona, and Silas Marner. Any form of dramatization was thoroughly enjoyed by this group. Scenes of plays or parts of stories, especially parts that may arouse interest in reading the whole, were dramatized at club meetings.

The students very frequently chose to relate their club program to the class work of the week. For example, while we were studying the *Odyssey* the club dramatized the meeting of the gods on Mount Olympus. Each member impersonated some god or goddess. The council was, of course, presided over by Zeus. At roll call each god answered to either his Roman or Greek name. He recited to the council those adventures for which he had become famous and those peculiar qualities which he possessed. Sometimes some bit of costume, as the wings on the heels of Mercury, helped in the impersonation of the god. At other times the club had chosen to spend the hour with some game or contest which would serve the purpose of a review of books recently studied in class. Much interest at one time was aroused in book and author cross-word puzzles. The students enjoyed conducting a review as a "spell-down," or dividing into groups and, on the blackboard, keeping score of the correct answers from each group.

Occasionally the club invited visitors to have a part in their meetings. The librarian used this opportunity to give the group instruction in the use of the library and in the care of books. We had at one meeting a splendid lecture on book illustrators. During one hour we listened to poetry selected and read by one of the University professors. Almost without exception, however, the pupils took entire charge of their club work. In addition to planning the program, provision was always made for the selection of material for the bulletin board. A committee collected pictures related to the work of the day, sometimes members of

this committee made attractive posters advertising books, or posters in the form of puzzles to test the book knowledge of the class. The making of plans for the bulletin board offered as great a test of the originality of the student as did the planning for a program and, as well, gave an opportunity to the pupil with artistic talent to contribute something really good.

The members of our club became very interested in the making of scrap books. In them they recorded the title and author of each book as it was read. If possible, they found a picture suggestive of the story. They collected pictures of authors, of places associated with familiar writers, interesting clippings about books from newspapers and magazines, in fact, anything related to reading which seemed to them of interest or value. A few of the pupils made collections of advertisements which alluded to literature; many collected book plates; some became enthusiastic over securing autographs of authors. They were successful in obtaining several autographs of unusual interest. Among others, Amy Lowell, Owen Wister, Henry Van Dyke, and Edward Bok were considerate enough to reply to their letters. They secured from various publishing houses much fairly valuable biographical material about living authors. The scrap books were brought regularly to meetings of the club and used as notebooks for recording material brought in by others. Each pupil reserved a page for a list of books which he wished sometime to read. The completed scrap books had been made very attractive in appearance and many of them contained material of value for reference. The collection of material for a scrap book and the comparison of it with those of others in the club seemed to heighten interest in reading, to broaden their funds of literary knowledge, and to acquaint the student with some of the good sources of finding material about books.

One of the more recent activities of the club was prompted by a suggestion that it should do something which would function in arousing greater interest in books among other students in the school. They asked for the use of a rack in the high school library where each week they might display a small collection of books for recreational reading. Above the rack they placed a poster telling other students that those books were recommended by their club. Each week the president appointed a committee of three to make a selection of books for this rack. They were careful to choose books of a variety of types. Usually about one-third of the books selected were fiction; the other books were chosen from biography, poetry, drama, travel books, and essays. This plan served to attract some attention to both the club and to the books.

However, should other students of the school give little notice to the selection, the process of choosing the books is probably useful in that it familiarizes the student with the library, and arouses discussions outside the classroom of the relative merit and interest of books. Each person in the club has served at some time on this committee. The choice of books has always been made without the help of the librarian or teacher. The students seemed to make rather rapid progress in the ability to make a good choice of books.

In as much as our club has been organized but one year, it makes no claims to great accomplishments. However, the pupils without exception look forward to book-club day, partly because it gives them a change from the regular work and partly because they enjoy talking about books. They are reading much and apparently developing tastes for better reading. I see no reason why it may not become a much greater positive benefit to its members.

This general plan of organization of the English class may be varied in any number of ways. The work of the club must of necessity be planned to meet the individual needs of a group. Only because this plan seems easily adapted to meet a variety of situations does it seem worth while to pass it on to others.

Without exception, the students said that they were eager that the club continue because they believed it worth while. A few of the typical comments were as follows:

"I am always waiting for book-club day to come round. I am learning to speak better and am more at ease. I am sure that it is helping everyone in these respects."

"In the first place, Book Club is something different from the everyday English class. It is a sort of recreation although it takes as much, or more, time to prepare for it as for the regular English lesson. There is always something new to learn about books and authors."

"I have always liked Book Club, because it interests me in books I have not known before."

"The club has given us practice in dramatization and in expressing ourselves by pantomime and speech. The reports on books have stimulated our interest so that we read poetry and books we have never heard of before—and enjoy them. It has also helped us in the selection of books. We know the best authors and the type of their works so that we are able to choose a book or story for any mood."

A few typical programs which have been planned and presented by our club might be of some interest. While the class was studying *Julius Caesar* the committee thought it appropriate to have a "Shakes-

peare day." They first assigned topics for discussion to various members of the class. The librarian and the teacher made suggestions to the committee regarding useful reference material to which they could refer the group. On the day of the club meeting, the chairman called on those people to whom topics had been assigned to stand before the class and, as they chose to express it, "make their speeches." For "Shakespeare Day" these topics were assigned:

"The story of Shakespeare's life."

"The Shakespeare country." (This discussion was illustrated with pictures from a copy of the *Mentor* magazine. The illustrative material was posted on the bulletin board before time for the club meeting.)

"The theatre of Shakespeare's day."

"A typical audience in an Elizabethan theatre."

"Boy actors in the time of Shakespeare."

Following these discussions another group dramatized a scene from *Julius Caesar*. They attempted to present it as they believed it might have been given in the day of Shakespeare. One student who had read rather widely told the club about books of fiction which give interesting pictures of English life during the reign of Queen Elizabeth. We found that the music department had a few Victrola records of Shakespearian songs. The playing of such lyrics as "Blow, blow thou winter wind" and "Who is Sylvia?" added interest and aroused appreciation. The program was concluded with the recitation of a Shakespeare sonnet, "When in disgrace with Fortune and men's eyes." Following the program the members of the club stood in line and repeated titles of Shakespeare's plays. Each person attempted to repeat in order those already named and to add one new title. The person who failed was, of course, forced to drop out of line. This game was effective in helping the group to learn titles as well as in providing drill in the correct pronunciation of those which are difficult. This program occupied two days and afforded an opportunity for a contribution from each student in the club.

A meeting of a different type is illustrated by the following program on the general topic of the making of books:

1. Picture writing.
2. Reading of the Kipling poem, "The Story of Ung."
3. The manuscript book.
4. The first printed books.
5. Book-making today (a report from a committee of boys who had visited a local printing shop).

6. The care of books (brief talk by the librarian).

The following program created much interest in the books of Mark Twain:

1. Mark Twain's boyhood.
2. Later life of Mark Twain.
3. A visit to the country in which Mark Twain spent his youth.
4. The originals of the characters of his books.
5. Some samples of Mark Twain's humor (quoted or read).
6. Review of *Joan of Arc*.
7. Volunteer comments on favorite Mark Twain stories.
8. Dramatization of one chapter from *Tom Sawyer* (how Tom Sawyer whitewashed the fence).

From our experience with the book club it is apparent that much may be gained through such an organization in broadening acquaintance with good books and in stimulating interest in reading for recreation. That the students in this group are reading widely without the pressure of a "reading requirement" may not be entirely due to their interest in the club. A book list such as that of Miss Essie Chamberlain and Miss Bertha Carter's "Annotated Guide to Reading" can scarcely fail not only in attracting students to books, but in attracting each individual student to the book which he will most enjoy. However, if a book club can give some stimulus to reading and at the same time afford the student an opportunity to develop his originality, his initiative, and his ability in oral expression and interpretation, it might be well worth trying in any school.

DEVELOPMENTAL RECITATION IN GENERAL SCIENCE

WALTER R. KUKETS

In the teaching of general science, it sometimes happens that a pupil will ask, at the beginning of the class period, a question which will upset, or at least change, the regular plans of the teacher for that particular recitation. Especially, is it true, if this question is of a kind which may lead to fruitful results if followed out to its final conclusion. Such a question was asked, and it led to the development of the following recitation. Consequently, this recitation differs from the ordinary recitation in that the pupils had made no previous preparation, and it was based entirely on their experience.

At the beginning of the recitation period one of the pupils asked the following question: "Has the moon an orbit around the orbit of the earth or around the earth itself?" It was evident to the teacher that by working with this question it would be possible to turn out enough subordinate questions and points to meet the following general science aims:

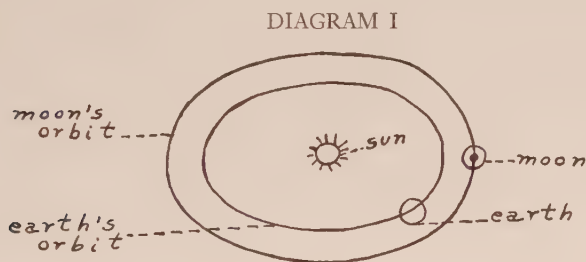
- A. To show the relationship between the sun, moon, and the earth.
- B. To show the position that these three bodies must occupy in the universe in order to have an eclipse of the sun, and of the moon.
- C. To explain the following related phenomena:
 - a. The seasons, night and day.
 - b. Circumference of the earth's orbit.

The teacher suggested to the members of the class that they write on the black board some of the things they knew concerning the sun, moon, and the earth. The following information was furnished by the pupils, representing the sum total of their knowledge of the subject matter:

- 1. Most of the pupils had seen an eclipse of the sun.
- 2. Few had seen an eclipse of the moon.
- 3. All were familiar with night and day, and the seasons.
- 4. One pupil had heard of gravity.
- 5. Three pupils stated that there was another force which held the universe together, and that this force was called gravitation.
- 6. All pupils stated that an ordinary year contained three hundred and sixty-five days.

7. Two pupils stated that every four years there was a year which had three hundred and sixty-six days, and that this year was called leap year.
8. Some stated that the sun and the moon had some influence on the tides.
9. One pupil stated that the circumference of the earth was twenty-five thousand miles.
10. One pupil stated that the earth moved on its orbit, and that the turning of the earth and the inclination of the earth's axis produced our days and nights, and seasons.

Using these ten statements as a basis for future developments, we turned our attention to the answering of the above mentioned question. We had to derive some definite statements regarding the location in space of the three bodies. "What must be the relation between the three bodies, class?" One pupil stated that the earth had an orbit and that it traveled along this orbit. He volunteered to make a diagram on the black board, showing this relationship.



His diagram showed the orbit of the earth; around this orbit there was another orbit larger than that of the earth's along which the moon was supposed to travel. The sun was in the center of the diagram.

This diagram gave us some idea of the relative locations of the three bodies in space and the only thing we had to do was to discover some means for determining whether or not this diagram represented the true state of affairs. The following question was asked: "Would it be possible to have an eclipse of the moon if this diagram represented the true conditions?" One pupil stated that in order to have an eclipse of the moon something must come in between the moon and the sun. "What must this something be?" One pupil suggested that since moonlight was reflected sunlight, the only thing that could come in would be the earth. All pupils saw that if the earth came in between the sun and

the moon, the earth's shadow would be cast on the face of the moon, and would cause an eclipse.

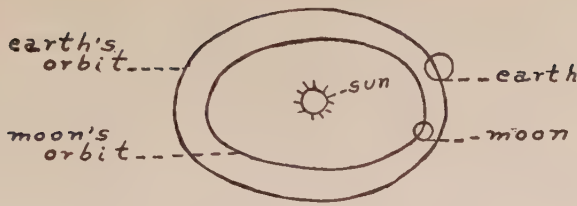
This would account for the eclipse of the moon. "But what about the eclipse of the sun?" Here we had to derive another general statement, and prove it in order to make it applicable as a criterion for our recitation. Three pupils stated as follows: "Well, now, if the earth had to come in between the sun and the moon in order to have an eclipse of the moon, something must come in between the sun and the earth, in order to have an eclipse of the sun." "Can the moon come in?" asked the instructor. It was plainly to be seen that if the moon came in between the sun and the earth that a section of the sun's surface would be shut off, and there would result an eclipse of the sun. In this manner we derived the following criteria for judging whether or not the diagram made by the pupil was correct:

- A. An eclipse of the moon will result when the earth comes in between the moon and the sun and casts its shadow on the moon. This eclipse will take place only when they are all in a straight line.
- B. An eclipse of the sun will result when the moon comes in between the sun and earth, and shuts off a part of the sun's surface from view. This will take place only when they are all in a straight line.

We applied the two criteria to Diagram I, and found that the earth will come in between the sun and moon, and that if the three bodies are in a straight line, an eclipse of the moon will result. The diagram satisfied the criterion for the eclipse of the moon. Next we tried to find out whether or not there could be an eclipse of the sun. On examining the diagram we found that the moon could never come in between the sun and the earth. It was evident that the diagram could not satisfy the criterion for the eclipse of the sun.

The next question was: "What rearrangement can we make in this diagram so that the moon will come in between the other two bodies and cause an eclipse of the sun?" One pupil stated that the orbit of the moon should be inside of the earth's orbit. This pupil made a diagram on the blackboard expressing his idea of the relationship between the three bodies. His diagram is essentially the same as Diagram I, except that the orbit of the moon is inside of the earth's orbit (by inside is meant the side nearest to the sun).

DIAGRAM II

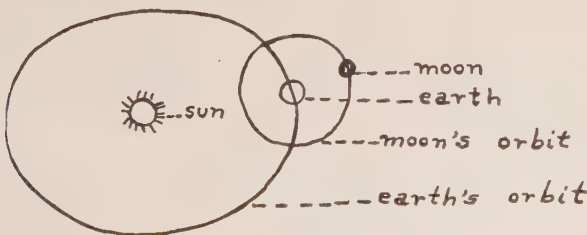


Once more we applied criterion A, this time to the second diagram, to see whether or not the earth will come in between the sun and the moon and cause an eclipse of the moon. On examining the diagram we found that the earth would never come in between the other two bodies and cause an eclipse of the moon. Next we tried to find out whether or not the moon would come in between the earth and the sun, and cause an eclipse of the sun.

On examining the diagram we found that the moon would come in between the earth and the sun as its orbit was inside that of the earth's orbit. The second diagram would meet the criterion for the eclipse of the sun, but would not meet the criterion for the eclipse of the moon. Consequently we had to abandon this diagram and look for something better—one which would satisfy both of the criteria.

The teacher asked the following question: "How can we combine these two diagrams in such a way as to meet both of the criteria?" For a while there was thoughtful silence, then one pupil stated that the moon's orbit was not around the orbit of the earth, but around the earth itself. This pupil made a new diagram on the blackboard. He located the sun in the center of the diagram, the orbit of the earth around the sun, and the orbit of the moon around the earth itself instead of around the orbit of the earth as in the two previous diagrams. We analyzed this new diagram to see if it would meet the two criteria previously worked out.

DIAGRAM III



We found that the earth would come in between the sun and the moon, and cause an eclipse of the moon. This met one of the criteria. Next we tried to see whether or not the moon would come in between the earth and the sun, and cause an eclipse of the sun. We found that it would. This satisfied the second criterion. Of the three diagrams this was the only one that would meet the given conditions.

We had developed a diagram showing the location, arrangement, and relation to one another of the three bodies. We also had developed an explanation for the eclipse of the moon and the sun, not from a diagram as worked out by some one else, but by combining our common experiences and common sense.

There remained some other questions to be answered. One of these questions was: "What must be the circumference of the earth's orbit?" We found in Diagram III that the earth's orbit was around the sun. One pupil asked: "What happens when the earth has made a complete journey around the sun on its orbit?" One pupil stated that when the earth makes a complete trip around its orbit that it means the completion of a year. Reversing the question it would mean that it took the earth exactly a year to make a complete journey around the sun. One pupil stated that it was not true, as some years had three hundred and sixty-five days, and that every fourth year had three hundred and sixty-six days. There was silence for a moment, then one pupil stated that it took more than three hundred and sixty-five days for the earth to make a complete journey around its orbit. One pupil stated that perhaps it took three hundred and sixty-five days and six hours for the earth to make a complete round trip. These six hours were not counted until the fourth year when a whole day was added to the year. This sounded reasonable, and so we accepted that as a final statement. Still the question asked at the beginning of the paragraph remained to be answered. One pupil suggested that if we knew at what rate the earth traveled on its orbit we could calculate the circumference of the orbit. The teacher had to supply them with the necessary information that the earth traveled at the rate of about 18.5 miles per second. One pupil stated that we must know, in addition to the rate of travel, the number of seconds that there are in any given year. We assumed that it took the earth three hundred and sixty-five days and six hours to make a complete journey around its orbit. Using that data we found that the circumference of the earth's orbit was about 600,000,000 miles.

In addition to basing the recitation on the experience of the pupils, there was plenty of opportunity given for them to express themselves on any phase of the subject.

At the end of the period each pupil felt that he or she had contributed something toward the completion of the lesson. The teacher, during the whole recitation, led the class to discover the right answer by suggestions or criticisms of their reasoning.

AN EXPERIMENT IN THE TEACHING OF ENGLISH LITERATURE

LIESETTE J. MCHARRY

At University High School it has been our happy privilege to develop and try out a type of individual instruction adapted to our own needs in the teaching of English composition in the tenth grade. We have planned a course of study which is made up of a number of problems in rhetoric stated in very simple outline form. Each problem demands the mastery of certain essentials by all students; and, in addition, it suggests somewhat intensive study of related subject matter by the more capable students. The course of study also includes lists of books for supplementary reading. These are all suited to the interests of tenth grade students, but are of various degrees of difficulty. The outcomes of this experiment have been sufficiently gratifying to justify further efforts in the same direction.

At present we are launching an experiment in individual instruction in one section of our eleventh grade English, which is a survey of English literature, following Miss Rich's text, *A Study of the Types of Literature*.¹ For those who are not familiar with this text, we may explain that Miss Rich has based her survey upon the outline of the types of literature, traced from their origins, rather than upon the more frequently used chronology of literature. She has defined each type, has given early and late specimens of each, and has added a comprehensive list for supplementary reading in each. The wealth of material in such a course makes the problem of the capable student a real one. He must have an opportunity to read widely while the slow student is drilling upon essentials. We have attempted to give him this opportunity by adapting the individual method of instruction to Miss Rich's text.

We have divided the subject matter of the semester into units with a time limit of one week upon each. At the beginning of each week, we give the students a sheet of directions to guide them in the study of one unit. This sheet includes a definite statement of aims, a plan for review, an assignment for class discussion, a list of references for study, suggestions for reading and memorizing, and topics for original written work. We require the students to keep notebooks in which they record notes upon their reading, outlines, original papers, and other materials.

¹RICH, MABEL IRENE. *A Study of the Types of Literature*. New York: The Century Company, 1925.

In requiring the notebooks, we hope to give an incentive for the development of individual interests. Some of the notebooks tend to become scrap books, reflecting literary tastes to be developed.

There is no fixed rule by which the students must complete a unit of work. Usually, however, we use the first four periods of the week as laboratory hours in which the students read, study, write papers, prepare reports, and write up their notebooks. The teacher is present to direct the activities of all and to give help at the time it is needed. The class period on Friday is utilized for class discussion. The students give oral reports and reviews before the class at convenient times, occasionally at the beginning or end of laboratory hours. Each one studies outside of the classroom just as much as his individual needs demand. He knows that he must complete the study of his unit and have his notebook as complete as he wishes to make it when he comes to the classroom on Friday.

Our plan is to give formal written tests at the end of each division of subject matter. For instance: a test follows our study of the four-week units of the modern drama. Then, too, we use a part of each discussion hour for review and testing; and occasionally we have a ten minute oral test at the beginning of a laboratory hour.

No more detailed description of the method is possible at this time, for it is yet in the process of growth. We are able to offer no information as to the values of the method except to say that the students are interested and are wasting little time in the classroom. We hope to make a more complete report at a later time. The following copies of a few of the direction sheets which we give to the students may be of interest to the readers.

ENGLISH III—SECOND SEMESTER, 1925-26

FIRST WEEK

I. Aims

1. To trace the life of the English drama from the time of Shakespeare to the nineteenth century.
2. To appreciate the dramas of Goldsmith and Sheridan.

II. Review

Summarize in a few definite statements the merits of Shakespeare that brought the English drama to its greatest height.

Long: p. 87-100²

Long: p. 153-54

Halleck: p. 190-99³

²LONG, WILLIAM J. English Literature. Chicago: Ginn and Company, 1909.

³HALLECK, REUBEN POST. English Literature. Chicago: American Book Company, 1913.

III. Class Discussion

1. Make a survey of the rise and decline of the English drama according to Miss Rich's chronological table.
2. Note the turn for the better under Goldsmith and Sheridan in the eighteenth century.
3. Report upon presentations of these plays that you have seen.
4. Read and comment upon interesting bits from the plays.

IV. Study

1. General Survey
Rich: p. 280-83
2. The history of the decline of the English drama and the conditions causing the decline in each period.
 - (a) Elizabethan Age
Long: p. 156-57
 - (b) Puritan Age
Long: p. 210-11
 - (c) Restoration Age
Long: p. 246-47
Garnett and Gosse: III, p. 99-103⁴
 - (d) Eighteenth Century
Long (Revised): p. 178-79⁵
3. Goldsmith and Sheridan (Individual reports)

V. Reading (optional)

1. One or more of the plays of the eighteenth century (see list—Rich: p. 282)
2. Goldsmith's *Deserted Village* (memorize a few lines)

VI. Written Paper

1. Imagine yourself to be Shakespeare. Comment upon the Puritan Age.
2. An original bit of dialogue featuring Mrs. Malaprop.

Hand in notebooks.

SECOND WEEK

I. Aims

1. To study the mask and the monologue as dramatic forms.
2. To appreciate their scope and limitations.

II. Review

1. Why have the plays of Goldsmith and Sheridan lived until now?
2. What do you know about Mrs. Insull's work in the *School for Scandal*?

III. Study

1. The mask
Rich: p. 283-84
Long: p. 210-11
2. The monologue
Rich: p. 313
Long (Revised) p. 275-76

⁴GARNETT and GOSSE. An Illustrated History of English Literature. New York: The Macmillan Company, 1923.

⁵LONG, WILLIAM J. Outlines of English Literature, with Readings. Chicago: Ginn and Company, 1925.

IV. Reading

1. Milton's *Comus*

- (a) What is the main theme?
- (b) If the mask were presented on the stage, wherein would it be effective?
- (c) Study characters and atmosphere.
- (d) Use Miss Rich's questions.

2. Jonson's *Sad Shepherd* (optional)

3. MacKaye's *Caliban by the Yellow Sands* (optional)

4. Browning's *My Last Duchess*

- (a) Who is the speaker?
- (b) What is his dominant trait?
- (c) What does he wish?
- (d) What do you learn about the last duchess?

V. Oral Discussion

- 1. Influences of Jonson and Milton on the English drama.
- 2. Characteristics of Browning as a writer.
- 3. *Comus* as a mask.
- 4. *My Last Duchess* as a monologue.

VI. Written Paper

A ten line imitation of Browning's monologue.

A comment upon any reading you have done during the week.

Hand in notebooks.

TIMED TESTS AS A METHOD OF DRILL IN ALGEBRA

S. HELEN TAYLOR

To develop particular skills in first-year algebra in working with linear equations, simple fractional equations, special products, factoring, as well as with the fundamental operations, I have found that very short timed tests have most of the desirable features of a successful drill exercise. A timed test should consist of a list of exercises which require skills of one particular type, graded carefully from very easy ones to slightly more difficult ones. After such a list is placed on the black-board, the pupils begin to work, doing as much as possible in ten minutes. The list should be too long to be completed by the best pupils.

The papers are checked before the next day and on each paper a note is made of the types of errors responsible for the mistakes, so that each pupil may try to eliminate these errors. Two or three days later, a similar though usually a longer or more difficult timed test on the same topic is given. In such tests the papers are always scored for the number of exercises correctly done, that is, a paper with ten absolutely correct answers scores 10, seven correct scores 7, and so forth. No credit is given here for an exercise in which some terms of the answer are correct, or for an incorrect answer where the work shows knowledge of method, although in other types of written work and tests liberal credit may be given for correct method.

The results of each test are graphed and when two or three timed tests are given over one division of subject-matter, the results are graphed on the same sheet and then posted on the bulletin board where the pupils may study the results. Each pupil learns to read from the graph his rank in the class, how his rank compares with the average or median, and how his ranking in a second test compares with his first ranking. In this way the graph informs the pupil of his progress. The teacher can, by individual comment, suggest to a pupil the level she expects him to attain in subsequent work.

In each time test the specific aim, as already stated, is to develop a particular manipulative skill or to emphasize a particular simple mathematical principle. Such tests also give training in certain general attitudes and habits. The pupil is encouraged to be accurate in all work, to verify results quickly, to sustain attention, and to work at his maximum speed. This type of test used on a certain list of topics where manipu-

lation is an essential detail, and used at least twice in connection with each of seven or eight topics during the year is novel and interesting enough to be a real challenge to both the able but careless pupil and to the mediocre pupil. In each class the first use of a timed test has brought to light an unexpected ability in certain lazy or disinterested pupils.

In the first-year algebra class we are using Nyberg's¹ book as a text. The arrangement of topics in this book is different from that of most texts. Fractional equations with monomial denominators come during the first semester at about the twelfth week, before other work in fractions is considered and before any factoring is treated. Considerable drill is necessary if ninth grade pupils, so early in the course, are to attain skill in choosing a lowest common multiple of the denominators and clear the equation of fractions by multiplying each member by this lowest common multiple. The two timed tests used are inserted here. They were given with one day intervening for corrections and discussion in class.

FIRST TIMED TEST—FRACTIONAL EQUATIONS

Time—Ten Minutes

$$1. \frac{x}{3} = 5$$

$$6. \frac{x}{3} - \frac{x}{5} = 4$$

$$11. \frac{a}{5} - \frac{a}{3} = -2$$

$$2. \frac{x}{5} = 4$$

$$7. \frac{2x}{3} + \frac{x}{4} = 11$$

$$12. \frac{x}{3} + \frac{x}{2} = -10$$

$$3. \frac{x}{4} = \frac{20}{3}$$

$$8. \frac{2x}{5} - \frac{x}{2} = -1$$

$$13. \frac{x}{2} - 20 = 3$$

$$4. \frac{x}{2} + \frac{x}{3} = 5$$

$$9. x + \frac{x}{2} + \frac{x}{3} = 11$$

$$14. \frac{x}{9} - 4 = 1$$

$$5. \frac{x}{5} + \frac{x}{4} + \frac{x}{2} = 19$$

$$10. 2x - \frac{x}{3} = 10$$

$$15. \frac{y}{5} - \frac{2y}{5} = -5$$

¹NYBERG, JOSEPH A. First Course in Algebra. New York: American Book Company, 1924.

SECOND TIMED TEST—FRACTIONAL EQUATIONS

Given two days later

Time—Ten Minutes

$$1. \frac{x}{2} = 2$$

$$8. 12x - \frac{x}{2} = 69$$

$$15. \frac{x}{11} - x = -10$$

$$2. \frac{x}{3} = 2$$

$$9. \frac{c}{3} - c = 3$$

$$16. \frac{2a}{3} + \frac{3a}{4} - \frac{a}{12} = 16$$

$$3. \frac{2x}{3} = 5$$

$$10. \frac{n}{2} + n = 9$$

$$17. \frac{5x}{6} + \frac{2x}{3} - \frac{x}{2} = 6$$

$$4. \frac{x}{3} = -5$$

$$11. \frac{2x}{7} - 1 = 2$$

$$18. \frac{x}{7} - \frac{2}{3} + x = 17$$

$$5. \frac{x}{3} - 1 = 5$$

$$12. \frac{y}{2} + \frac{y}{3} + y = 11$$

$$19. \frac{x+3}{2} = 5 - \frac{x}{5}$$

$$6. \frac{x}{4} = \frac{1}{3}$$

$$13. \frac{3x+5}{2} = \frac{15x-1}{8}$$

$$20. \frac{a+3}{5} + 2 = a-3$$

$$7. \frac{x+3}{2} = 1$$

$$14. \frac{x}{7} - \frac{x}{3} = -4$$

The way in which the tests were set up is a question which will probably occur to the reader. The choice of exercises and the method of grading them according to difficulties is the result of previous experience and judgment just as any list of drill or test questions must be. However, in setting up timed tests I have based the grading of the exercises on some definitely recorded lists of pupil difficulties from four classes. In the first test on fractions, exercises 1, 3, 5, 6, 7, 8, 9 represent separate and definite steps in a scale of difficulty. In 1, the pupil multiplies by the single denominator factor; in 3, by the lowest common multiple of the two denominators; in 5, there are three denominators to consider; in 6, the minus sign must be thought of; in 7, a coefficient different from one occurs; in 8, the right member is a negative constant; and in 9, one term involving x has the denominator unity. The degree of difficulty of these exercises had been checked in four previous years' classes and the assigned order resulted from this check. At the beginning of the first test, exercise 2 is of the same type as 1, 4 is no more difficult than 3, and this repetition tends to give the pupil a better beginning and hence confidence in his ability. In the second test additional difficulties occur but this list begins with a greater repetition of the simplest type of exercise than did the first test. The simplicity of

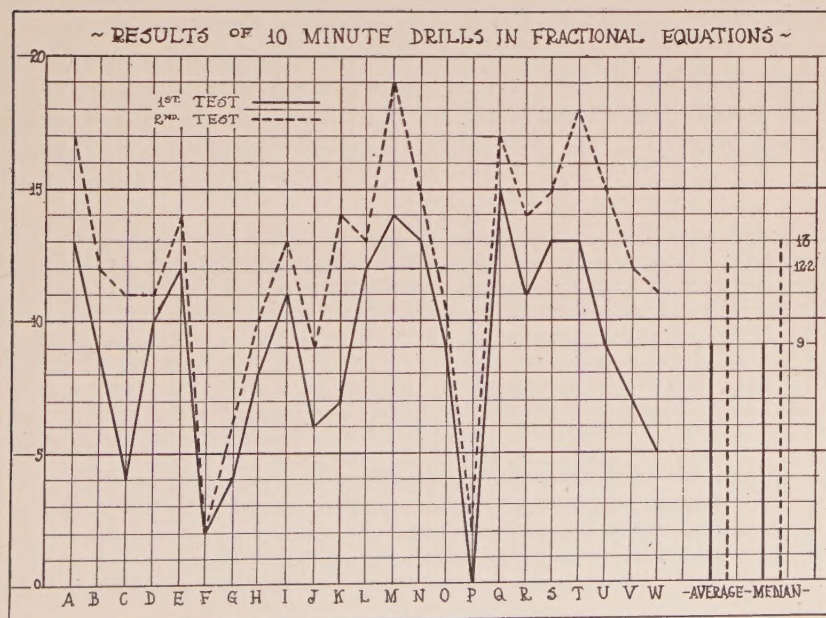
the first part of the test serves to balance the test, and aids in overcoming later difficulties.

The scores in these two tests are given in the following table.

SCORES OF THE MEMBERS OF A CLASS ON TWO TIMED TESTS

Pupil	1st Score	2nd Score	Pupil	1st Score	2nd Score
A	13	17	M	14	19
B	9	12	N	13	15
C	4	11	O	9	10
D	10	11	P	0	2
E	12	14	Q	15	17
F	2	2	R	11	14
G	4	6	S	13	15
H	8	10	T	13	18
I	11	13	U	9	15
J	6	9	V	7	12
K	7	14	W	5	11
L	12	13	Average	9	12.17
			Median	9	13

The graph shows the results of these two tests and was placed on the classroom bulletin board the day after the second test. The boy whose score is given opposite N had been rated as an average or C pupil (our grades are A, B, C, D for passing grades, and E for failure).



In both these tests the boy N did more exercises than the average of the class did, so from that time the teacher took careful notice of his work and discovered that he was able enough, inclined to be lazy, but was responsive to the spur of group competition. L, a girl, likewise had a low standing, a grade of D, for the first six weeks. As she was well above the average in the timed test, it was possible to keep her at a C standing which later seemed to be her maximum level. The better pupils who, by other tests, ranked in the upper fourth of the class, without exception kept within this range with only slight interchanges of order. The surprises usually come from the so-called mediocre pupils, from which group two or three do excellent and accurate work in a timed test.

I have used successfully in drills similar to these, two test exercises in division of polynomials by monomials, two tests in special products, and six tests in successive types of factoring, ending with two drill tests in miscellaneous factoring exercises. The scoring and the graphing of results for use on the classroom bulletin board is very simple and requires little time. These tests are quite a favorite type with ninth year pupils. Timed tests, not too frequently given, offer the most advantages and the fewest disadvantages of any type of written drill I have used.

A MATHEMATICS ASSEMBLY¹

ANNE THOMSEN

In planning our mathematics assembly, the problem that seemed most important was that of making our program interesting to all of the people in our greatly varied audience. To solve this problem, the people who presented papers were chosen from the beginning as well as the advanced classes; care was taken in the selection of material; diagrams and blackboard demonstrations were used to aid the explanations; and finally, whenever it was possible, the people in the audience were given an opportunity to take part in the development of a topic.

Our program consisted of the following numbers:

"Great women mathematicians"

"The origin of our numerals"

"How to build a magic square"

"Short cuts to multiplication"

"Puzzling problems"

I shall elaborate on a few of these topics to illustrate several methods that were used to encourage the listeners to become active participants.

A tiny freshman girl gave the first talk on "Great women mathematicians." She related a number of humorous incidents from the lives of these mathematicians and supplied just enough historical facts to bring out the chronological order of her general plan. The technical works of these women were mentioned only to amuse the audience with their lengthy foreign titles.

¹Assemblies at the University High School are held, on an average, once a week. A committee from the high school staff has charge of the programs. The purpose throughout the year is to correlate outside things with the work of the school, and at the same time to contribute to interest, pleasure and knowledge. To this end, pupils from the school, members of the staff and persons having no connection with the school, appear on the programs. Pupils from the classes in a department or from a single class in it sometimes furnish the program. As an example, two or three years ago the general science class explained the heating and ventilating system of our building and asked for cooperation for its proper use. One of the teachers or supervisors may relate something of interest and value from his experiences or particular interests. Persons from the University and Twin Cities frequently present vivid and interesting accounts of their travels, professions or avocations. Moving picture films, primarily educational, are used several times a semester. By virtue of the variety of the programs, their excellence, due to capable contributors, and their application to many features of school work, our assembly programs have been very favorably received.

A sophomore girl gave a bit of the history of magic squares and explained the rules for building such figures. After a clear demonstration of the details of the process on the blackboard, she induced the audience to help her put the numbers in a square of different order. The chorus of answers to her questions gave evidence of the fact that the audience had caught the spirit of the game.

A boy, with a natural aptitude for high speed, demonstrated a number of short methods of multiplication and then volunteered to do certain types of examples suggested to him by anyone in the audience. In order to test the superiority of his methods, he challenged everyone present to work the same examples more quickly than he could. After some exciting competition he gave a little insight into the methods he had employed; but when the hour ended, he was besieged by a group of boys who were eager to learn more about the mysteries they had witnessed.

The last speaker called upon individuals to give approximate solutions of the problems which he presented. Estimates of the weight of a cork ball six feet in diameter ranged from two to thirty pounds. All were astonished to find out that it would weigh over seventeen hundred and fifty pounds. In the second problem, he asked the audience to imagine that the equator was a steel band around the earth. He then requested them to guess how far the equator would be uniformly raised from the surface of the earth by the addition of twenty-two feet to the length of the equator. Some answers were as low as one thousandth of an inch while no one was inclined to believe that the true answer was approximately three and one-half feet. The number of times that a coin turns about its own center while it makes one complete revolution about another coin started some experimentation with bewildering results. Great merriment accompanied the request that each person in the audience approximate his own volume in cubic feet. It was surprising to find that some freshmen had a volume of less than one and one-half cubic feet. The old problem of comparing simple and compound interest on one dollar from the year 1 A. D. up to the present time gave rise to marked speculation among future financiers.

We felt that we had accomplished our aim, that of arousing interest, mostly by doing away with the customary formality of a mathematics program. When the bell rang, no one had enjoyed the hour more than the people who at one time dubbed themselves unlucky in that it was their lot to appear on the program.